7. Alternative 3 (West Lancaster): Impacts and Mitigation Measures

The following section describes geology, soils, and paleontology impacts of Alternative 3 (West Lancaster Alternative), as determined by the significance criteria listed in Section 4. Mitigation measures are introduced where necessary in order to reduce significant impacts to less-than-significant levels. As described in Section 1.2.3, this alternative would deviate from the proposed route along Segment 4, at approximately S4 MP 14.9, where the new 500-kV transmission line would turn south down 115th Street West for approximately 2.9 miles and turn east for approximately 0.5 mile, rejoining the proposed route at S4 MP 17.9. This re-route would increase the overall distance of Segment 4 by approximately 0.4 mile, but it would not have the potential to encounter or avoid any sources of contamination or hazards that would be affected or traversed by the proposed Project and would not introduce any new source of contamination or hazards to Project-related impacts.

7.1 Direct and Indirect Effects Analysis

The significance criteria used to identify Geology, Soil and Paleontology are introduced in Section 4.1 (Criteria for Determining Impact Significance). Although this alternative introduces a re-route of part of Segment 4 of the proposed transmission line, the short re-route has a nearly identical setting as Alternative 2 (the proposed Project), and thus impacts associated with Alternative 3 would be the same as impacts associated with the criteria for the proposed Project. Impacts associated with Alternative 3 are presented below under the applicable significance criterion.

Unique geologic features (Criterion GEO1)

No unique geologic features or geologic features of unusual scientific value for study or interpretation would be disturbed or otherwise adversely affected by Alternative 3. No impact would occur.

Known mineral and/or energy resources (Criterion GEO2)

Impacts associated with Criterion GEO2 for Alternative 3 would be the same as impacts associated with this criterion for the proposed Project. Although this alternative introduces a re-route of part of Segment 4 of the proposed transmission line, as with the equivalent portion of Segment 4 there are no known mineral resource sites along the re-route and therefore the impacts related to Criterion GEO2 would be the same as for the proposed Project, as presented in Section 6.1, and summarized below.

Impact G-1 (Project activities could interfere with access to known energy resources) would be the same as for the proposed Project. Therefore where the portions of Alternative 3 equivalent to Segments 7, 11, and 8 would cross the Montebello oil and gas field and where the Segment 8 equivalent would cross the northern edge of the Brea-Olinda oil and gas field, there is a potential for Project construction activities to interfere with oil field operations. Impact G-1, as described in Section 6.1, for Alternative 3 would require implementation of Mitigation Measure G-1 (Coordination with oil field operations) to reduce potential impacts to less than significant (Class II).

Triggering or acceleration of geologic processes, such as landslides, soil erosion, or loss of topsoil, during construction (Criterion GEO3)

Impacts associated with Criterion GEO3 for Alternative 3 would be the same as impacts associated with this criterion for the proposed Project. Although this alternative introduces a re-route of part of Segment 4 of the proposed transmission line, the geologic materials, soils, and very gentle slopes would be identical to those of the proposed Project and there would be no substantial increase in the potential for erosion triggered or accelerated due to construction activities. These impacts and their associated mitigation measures that fall under Criterion GEO3 are summarized in the following paragraphs. Please see Section 6.1 (Direct and Indirect Effects Analysis) for a detailed description of these impacts, as they are the same as the proposed Project.

Impact G-2 (Erosion could be triggered or accelerated due to construction activities) would be the same under Alternative 3 as it would be for the proposed Project (please see Section 6.1). The rerouted portion of Alternative 3 is only minimally longer than the proposed Project route and is located on the same soil types with the same potential for erosion. The remaining portion of Alternative 3 is identical to Alternative 2 and the potential of erosion triggered or accelerated due to construction activities is the same as presented in Section 6.1, and would require implementation of Mitigation Measure H-1a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits). With implementation of this mitigation measure, as described in Section 6.1, Impact G-2 of Alternative 3 would be less than significant (Class II).

Impact G-3 (Excavation and grading during construction activities could cause slope instability or trigger landslides) would be the same for Alternative 3 as it would for the proposed Project (see Section 6.1). The rerouted portion of Alternative 3 is located in flat-lying terrain and there is no potential for slope failure. The remaining portion of Alternative 3 is identical to Alternative 2 and the potential of slope failure or triggered landslides due to construction activities is the same as presented in Section 6.1, and would require implementation of Mitigation Measure G-3 (Conduct geological surveys for landslides and protect against slope instability). With implementation of this mitigation measure, as described in Section 6.1, Impact G-3 of Alternative 3 would be less than significant (Class II).

Exposure to potential risk of loss or injury due to earthquake-related ground rupture (Criterion GEO4)

Impacts associated with Criterion GEO4 for Alternative 3 would be the same as impacts associated with this criterion for the proposed Project. Although this alternative introduces a re-route of part of Segment 4 of the proposed transmission line, as with the equivalent portion of Segment 4 there are no fault crossings along the re-route and therefore the impacts related to Criterion GEO4 would be the same as for the proposed Project, as presented in Section 6.1, and summarized below.

Impact G-4 (Project structures could be damaged by surface fault rupture at crossings of active faults exposing people or structures to hazards) would be the same for Alternative 3 as it would for the proposed Project (see Section 6.1). The rerouted portion of Alternative 3 does not cross any active faults and therefore there is no potential for fault rupture along the reroute. The remaining portion of Alternative 3 is identical to Alternative 2 and the potential of surface fault rupture is the same as presented in Section 6.1. Therefore the portions of Alternative 3 equivalent to Segments 5, 6, 7, 11, and 8A where it crosses the active San Andreas (Segment 5), San Gabriel (Segments 6 and 11), Clamshell-Sawpit (Segment 6), Sierra Madre (Segments 7 and Segment 11 north of S11 MP 19), East Montebello Hills (Segments 7 and

8A), Whittier (Segment 8A), Chino (Segment 8A), and Central Ave (Segment 8A) faults would require implementation of Mitigation Measures G-4 (Avoid placement of Project structures within active fault zones) to reduce potential impacts to less than significant (Class II).

Exposure to potential risk of loss or injury due to seismically induced ground shaking, landslides, liquefaction, settlement, lateral spreading, and/or surface cracking (Criterion GEO5)

Impacts associated with Criterion GEO5 for Alternative 3 would be the same as impacts associated with this criterion for the proposed Project. The minimally longer length of the reroute for this alternative compared to the proposed Project would result in incrementally increased opportunity for damage to Project structures from seismically induced groundshaking along the reroute. Therefore the impacts related to Criterion GEO5 would be the same as for the proposed Project, as presented in Section 6.1, and summarized below.

Impact G-5 (Project structures could be damaged by seismically induced groundshaking and/or ground failure exposing people or structures to hazards) would be the same under Alternative 3 as it would for the proposed Project (see Section 6.1). Potential earthquake-related groundshaking along the Alternative 3 reroute is the same as that for the equivalent portion of Segment 4. Local strong to severe groundshaking may occur along the Alternative 3 alignment equivalent to portions of Segments 4, 5, 6, 7, 9, and 11 and would require implementation of Mitigation Measure G-5a (Reduce effects of groundshaking). The potential for liquefaction and earthquake induced slope failures along Alternative 3 are identical to the proposed Project (see Section 6.1). Therefore the portions of Alternative 3 equivalent to the portions of Segments 5, 7, 11, 8A, 8B, and 8C that cross young alluvial deposits in the Leona Valley, San Gabriel Valley, and active river washes and streams where lenses and pockets of loose seasonally saturated sand may be present would require implementation of Mitigation Measure G-5b (Conduct geotechnical investigations for liquefaction). Portions of Alternative 3 equivalent to Segments 5, 6, 11, and 8A where they are located along hillsides or ridgelines in geologic units of moderate to steep slopes that are susceptible to slope failures would require implementation of Mitigation Measure G-3 (Conduct geological surveys for landslides and protect against slope instability). Implementation of these measures, as described in Section 6.1, would reduce Impact G-5 of Alternative 3 to less than significant (Class II).

Exposure to potential risk of loss or injury where corrosive soils or other unsuitable soils are present (Criterion GEO6)

Impacts associated with Criterion GEO6 for Alternative 3 would be the same as impacts associated with this criterion for the proposed Project. Although this alternative introduces a re-route of part of Segment 4 of the proposed transmission line, the soils underlying the alignment would be identical to those of the proposed Project and there would be no change in the potential for damage to Project structures due to unsuitable soils. These impacts and their associated mitigation measures that fall under Criterion GEO6 are summarized in the following paragraphs. Please see Section 6.1 (Direct and Indirect Effects Analysis) for a detailed description of these impacts, as they are the same as the proposed Project.

Impact G-6 (Project structures could be damaged by problematic soils exposing people or structures to hazards) would be the same for Alternative 3 as the alignment crosses the same soil types as the proposed Project alignment. Soils along the alignment have a potential to corrode steel and concrete ranging from low to high and expansion potential ranging from low to high. Corrosive and/or expansive soils can cause damage to structure foundations, potentially comprising the structural integrity of the structure, a

significant impact (see Section 6.1). Therefore Alternative 3 would require implementation of Mitigation Measure G-6 (Conduct geotechnical studies to assess soil characteristics and aid in appropriate foundation design), as described in Section 6.1, to reduce impacts to less than significant (Class II).

Damage to Project structures due to slope failure (Criterion GEO7)

Impacts associated with Criterion GEO7 for Alternative 3 would be the same as impacts associated with this criterion for the proposed Project. Although this alternative introduces a re-route of part of Segment 4 of the proposed transmission line, there is no potential for slope failure along the flat-lying terrain of the re-route. Therefore there would be no substantial increase in the potential for slope failures to occur.

Impact G-7 (Transmission line structures could be damaged by landslides, earth flow, or debris flows, during operation) would be the same for Alternative 3 as it would for the proposed Project (see Section 6.1). The rerouted portion of Alternative 3 is located in flat-lying terrain and there is no potential for slope failure. The remaining portion of Alternative 3 is identical to Alternative 2 and the potential for failure of existing unstable slope or landslides during operation is the same as presented in Section 6.1, and would require implementation of Mitigation Measure G-3 (Conduct geological surveys for landslides and protect against slope instability). With implementation of this mitigation measure, as described in Section 6.1, Impact G-7 of Alternative 3 would be less than significant (Class II).

Destruction of unique paleontological resources (Criterion GEO8)

Impacts associated with Criterion GEO8 for Alternative 3 would be the same as impacts associated with this criterion for the proposed Project. Although this alternative introduces a re-route of part of Segment 4 of the proposed transmission line, the geologic materials would be identical to those of the proposed Project and there would be no substantial increase in the potential for Impact G-8 (Grading and excavation could destroy paleontologic resources) to occur. Additionally, APM PALEO-1 through APM PALEO-9 (Paleontologic resource planning, construction monitoring and recovery, and final report and museum curation) would be included as part of the Project in order to reduce the likelihood of destroying unique paleontologic resources. With implementation of these APMs, as described in Section 6.1, Impact G-8 of Alternative 3 would be less than significant (Class III). Please see Section 6.1 (Direct and Indirect Effects Analysis) for a detailed description of these impacts, as they are the same as the proposed Project

7.2 Cumulative Effects Analysis

This section addresses potential cumulative effects that would occur as a result of implementation of the Alternative 3 route. This alternative consists of re-routing the new 500-kV T/L in Segment 4 along 115th Street West rather than 110th Street West. This alternative was developed to avoid the existing residences. The remainder of this alternative route (which totals approximately 150 miles) would be identical to that of the proposed Project and would, therefore, result in substantially similar or identical impacts as the proposed Project. The rerouted portion of the Alternative 3 route generally parallels the proposed Project route for approximately 3 miles, at a 0.5 mile distance from the proposed Project route. As a result, this alternative traverses the same geologic materials as the portion of the proposed Project route it is proposed to replace, would require the same types of construction activities to build, and would result in the same operational capacity as the proposed Project.

Based on the substantial similarity of Alternative 3 to the proposed Project, this alternative's contribution to cumulative impacts would be identical to that of the proposed Project. See Section 6.2 for a detailed discussion of cumulative effects.

7.2.1 Geographic Extent

The geographic extent for the analysis of cumulative impacts related to geology, soils, and paleontology is limited to the Project site and the immediate vicinity surrounding Project substations, laydown areas, and the transmission line ROWs occupied by the proposed alignment. These geographic limits are appropriate to consider the potential cumulative impacts as the geologic materials and terrain on the Project site and directly adjacent to the Project site are the most significant factors to evaluate the potential for geologic hazards, unsuitable soil and paleontologic resources at a project site. Impacts would have the potential to occur during construction and operation and would be limited to the areas where concurrent construction is occurring. The geographic extent for Alternative 3 is identical to the proposed Project, as presented in Section 6.2.1.

7.2.2 Existing Cumulative Conditions

The existing cumulative conditions of Alternative 3 are identical to the proposed Project as discussed in Section 6.2.2.

7.2.3 Reasonably Foreseeable Future Projects and Changes

Reasonably foreseeable future projects and changes to the cumulative scenario for Alternative 3 would be exactly the same as Alternative 2, described in Section 6.2.3.

7.2.4 Cumulative Impact Analysis

As discussed for the proposed Project in Section 6.2.4, Impacts G-1 through G-3 of Alternative 3 would not have the potential to combine with impacts of other past, present and reasonably foreseeable projects for the same reasons discussed in Section 6.2.4. Impacts G-4 through G-8 for Alternative 3 would combine but not be cumulatively significant (Class III) with impacts of other past, present and reasonably foreseeable projects for the same reasons discussed in Section 6.2.4.

7.2.5 Mitigation to Reduce the Project's Contribution to Significant Cumulative Effects

Mitigation measures introduced for the proposed Project in Section 6.1 (Direct and Indirect Effects Analysis) would help to reduce Alternative 3's incremental contribution to cumulative impacts. However, there are no impacts or significant cumulative effects of Alternative 3 related to Geology, Soils, and Paleontology and no additional mitigation is required.